restore the project waters, lands, and facilities remaining within the project boundary to a condition satisfactory to the United States agency having jurisdiction over its lands or the Commission's authorized representative, as appropriate, or to provide for the continued operation and maintenance of nonpower facilities and fulfill such other obligations under the license as the Commission may prescribe. In addition, the Commission in its discretion, after notice and opportunity for hearing, may also agree to the surrender of the license when the Commission, for the reasons recited herein, deems it to be the intent of the Licensee to surrender the license.

Article 27. The right of the Licensee and of its successors and assigns to use or occupy waters over which the United States has jurisdiction, or lands of the United States under the license, for the purpose of maintaining the project works or otherwise, shall absolutely cease at the end of the license period, unless the Licensee has obtained a new license pursuant to the then existing laws and regulations, or an annual license under the terms and conditions of this license.

Article 28. The terms and conditions expressly set forth in the license shall not be construed as impairing any terms and conditions of the Federal Power Act which are not expressly set forth herein.

LIST OF FPC STANDARD ARTICLES FORMS USED IN PERMITS AND LICENSES FOR HYDROELECTRIC PROJECTS

The following FPC standard articles Forms, in addition to the standard Forms L–3, and L–4 which are provided in this appendix, are available from the FPC offices:

FPC Forms [1]	Title
P–1	Terms and conditions of preliminary permit.
L–1	Terms and conditions of license for constructed major project affecting lands of the United States.
L–2	Terms and conditions of license for unconstructed major project affecting lands of the United States.
L–5	Terms and conditions of license for constructed major projects affecting navigable waters and lands of the United States.
L–6	Terms and conditions of license for unconstructed major project affecting navigable waters and lands of the United States.
L–9	Terms and conditions of license for constructed minor projects affecting navigable waters of the United States.
L–10	Terms and conditions of license for constructed major project affecting the interests of interstate or foreign commerce.
L–11	Terms and conditions of license for unconstructed major project affecting the interests of interstate or foreign commerce.
L–14	Terms and conditions of license for unconstructed minor project affecting navigable waters of the United States.
L–15	Terms and conditions of license for unconstructed minor project affecting the interests of interstate or foreign commerce.
L–16	Terms and conditions of license for constructed minor project affecting lands of the United States.
L–17	Terms and conditions of license for unconstructed minor project affecting lands of the United States.
L–18	Terms and conditions of license for constructed minor project affecting navigable waters and lands of the United States.
L–19	Terms and conditions of license for unconstructed minor project affecting navigable waters and lands of the United States.

[1] Revised Oct. 1975.

PART 222—ENGINEERING AND DESIGN

Sec.

AUTHORITY: 23 U.S.C. 116(d); delegation in 49 CFR 1.45(b); 33 U.S.C. 467 *et seq.*; 33 U.S.C. 701, 701b, and 701c–1 and specific legislative authorization Acts and Public Laws listed in appendix E of §222.7.

§222.2 Acquisition of lands downstream from spillways for hydrologic safety purposes.

(a) *Purpose.* This regulation provides guidance on the acquisition of lands downstream from spillways for the purpose of protecting the public from hazards imposed by spillway discharges. Guidance contained herein is in addition to ER 405–2–150.

(b) *Applicability.* This regulation is applicable to all OCE elements and all field operating agencies having civil works responsibilities.

(c) *Reference.* ER 405–2–150.

(d) *Discussion.* A policy of public safety awareness will be adhered to in all phases of design and operation of dam and lake projects to assure adequate security for the general public in areas downstream from spillways. A real estate interest will be required in those

areas downstream of a spillway where spillway discharge could create or significantly increase a hazardous condition. The real estate interest will extend downstream to where the spillway discharge would not significantly increase hazards. A real estate interest is not required in areas where flood conditions would clearly be nonhazardous.

(e) *Hydrologic criteria.* The construction and operation of a dam and spillway may create or aggravate a potential hazard in the spillway discharge area. Therefore, an appropriate solution should be developed in a systematic manner. All pertinent facts need to be considered to assure that the risk to non-Federal interests does not exceed conditions that would prevail without the project. General hydrologic engineering considerations are as follows:

(1) *Probability of spillway use.* Pool elevation versus probability of filling relationships can change materially after initial construction. Spillway use may be more frequent than anticipated. The infrequent use of a spillway is not a basis for the lack of adequate downstream real estate interest.

(2) *Changes in project functions.* Water resource needs within river basins change and pool levels may be adjusted to provide more conservation storage, particularly when high-level limited-service spillways are provided. Such changes normally increase spillway use and are to be considered.

(3) *Volume and velocity of spillway flow.* The amount of flow and destructive force of the flow from a spillway during floods up to the spillway design flood can vary from insignificant to extremely hazardous magnitudes. The severity and area of hazard associated with spillway discharge will vary depending on specific project site conditions. Therefore, the hazard is to be analyzed on a project-by-project basis.

(4) *Development within floodway.* If development within the floodway downstream from a spillway is not present at the time of project construction, the existence of the reservoir may encourage development. Adverse terrain conditions do not preclude development. Sparse present development is not a basis for lack of real estate acquisition.

(5) *Debris movement within floodway.* The availability of erodible material in a spillway flow area intensifies the hazards of spillway flow. In fact, debris may be transported to downstream areas that otherwise would not be adversely affected. Extreme erosion may result from high velocities and turbulence. Both debris and erosion must be evaluated and considered.

(6) *Flood warning and response potential.* Small projects generally have short time periods available to warn downstream inhabitants and may be unattended prior to spillway use. The ability to convince individuals to leave most of their worldly possessions to the ravages of spillway flow may be severely limited. In some cases flood warning systems may be necessary; however, this subject is beyond the scope of this regulation. Warning systems are not an adequate substitute for a real estate interest in lands downstream of spillways.

(7) *Location of spillway.* Spillways should be located to minimize the hazards associated with their discharge and the total project cost (cost of spillway structure and downstream lands). Spillways, outlet works, stilling basins, and outlet channels should be designed to minimize hazards to downstream interest insofar as is engineeringly and economically reasonable.

(f) *Real estate.* The real estate interest required downstream of spillways will be adequate to assure carrying out project purposes and to protect non-Federal interest from hazards created by spillway flows. The interest may be either fee or permanent easement. A permanent easement must exclude all overnight and/or permanent habitation, structures subject to damage by spillway flows and activities that would increase the potential hazards. No real estate interest is required for:

(1) Areas where the imposed or aggravated flood condition is non-hazardous. Affected interest should be informed of the nature of the imposed non-hazardous flood condition.

(2) Areas where the construction and operation of a dam and spillway do not increase or create a hazardous condition.

(g) *Alternative land uses.* In some cases land downstream from spillways can be effectively used for purposes other than hydrologic safety. Therefore, the entire cost of these lands may not be an additional project cost. For example, the lands downstream of a spillway may be used for wildlife management essential to project purposes in lieu of other lands suitable for similar purposes at another location.

(h) *Procedural guidance.* Procedures regarding the application of the principles outlined in the above paragraphs are as follows:

(1) For various flood magnitudes up to the probable maximum flood determine the ''with'' and ''without project'' flood conditions downstream of a dam spillway for the following:

(i) Flooded area.

(ii) Flood depth.

(iii) Flood duration.

(iv) Velocities.

(v) Debris and erosion.

(2) Determine the combinations of flood magnitudes and the above flood conditions that could be the most hazardous and/or result in the greatest increase in hazard from ''without'' to ''with project'' flood conditions. Designate these combinations of flood magnitude and flood conditions as the critical conditions.

(3) For the critical conditions selected above outline the areas where the project could increase and/or create (impose) one or more of the critical conditions. Areas where spillway flows do not create or increase flood conditions are excluded from further analysis.

(4) Determine where the imposed critical conditions as outlined above would be hazardous and non-hazardous. Non-hazardous areas are defined as those areas where:

(i) Flood depths are maximum of 2 feet in urban and rural areas.

(ii) Flood depths are essentially nondamaging to urban property.

(iii) Flood durations are a maximum of 3 hours in urban areas and 24 hours in agricultural areas.

(iv) Velocities do not exceed 4 feet per second.

(v) Debris and erosion potentials are minimal.

(vi) Imposed flood conditions would be infrequent. That is, the exceedence frequency should be less than 1 percent. Hazardous areas are those where any of the above criteria are exceeded.

(5) Based upon the information developed above and the principles outlined in paragraphs (c) through (f) of this section, decide on the extent of area and estate required for hydrologic safety purposes.

(i) *Reporting.* Lands to be acquired downstream from spillways and intended purposes will be identified and the cost included in feasibility reports and real estate design memoranda. Additional specific information in support of land acquisition should be provided in Phase I or Phase II general design memoranda (GDM) and dam modernization reports. This information should include topographic maps, area flooded maps, velocities, erosion and debris areas ''with'' and ''without'' the project. Real estate boundaries and discussions of items in paragraph (h)(4) are also essential in the GDM's and dam modernization reports.

[43 FR 35481, Aug. 10, 1978. Redesignated at 60 FR 19851, Apr. 21, 1995]

§ 222.3 Clearances for power and communication lines over reservoirs.

(a) *Purpose.* This regulation prescribes the minimum vertical clearances to be provided when relocating existing or constructing new power and communication lines over waters of reservoir projects.

(b) *Applicability.* This regulation applies to all field operating agencies having Civil Works responsibilities.

(c) *References.* (1) ER 1180–1–1 (Section 73).

(2) National Electrical Safety Code (ANSI C2), available from IEEE Service Center, 445 Hoes Lane, Piscataway, N.J. 08854.

(d) *Definitions*—(1) *Design high water level.* The design high water level above which clearances are to be provided shall be either: (i) The elevation of the envelope profile of the 50 year flood, or flood series, routed through the reservoir with a full conservation pool after 50 years of sedimentation, or (ii) the elevation of the top of the flood control pool, whichever is higher.